AMENDMENT TO THE CLAIMS

Please amend the claims as follows. A marked copy of the pending claims, with insertions indicated by underlining and deletions in strikethrough is shown below. New claims 46-48 are added herein. This listing of claims will replace all prior versions, and listings, of claims in this U.S. application:

Listing of Claims:

Claim 1. (original) A chimeric protein comprising:

a) a first polypeptide comprising a papillomavirus L2 capsid polypeptide comprising a papillomavirus capsid protein Ll-binding region; and

b) a second polypeptide comprising at least one immunogenic epitope, wherein said first polypeptide is fused at its amino-or carboxy-terminus to said second polypeptide.

Claim 2. (canceled)

Claim 3. (canceled)

Claim 4. (canceled)

Claim 5. (original) The chimeric protein of claim 1, wherein said chimeric protein further comprises a glutathione-S-transferase protein, wherein said chimeric protein is fused at its amino-or carboxy-terminus to said glutathione-S-transferase protein.

Claim 6. (canceled)

Claim 7. (original) The chimeric protein of claim 1, wherein said papillomavirus capsid protein L1 binding region is derived from a papillomavirus capsid protein L2 polypeptide selected from the group consisting of HPV6, HPV6a, HPV11, HPV16, HPV18, HPV30, HPV31, HPV33, HPV35, HPV39, HPV42, HPV43, HPV44, HPV45, HPV51, HPV52, HPV54, HPV55, HPV56, and HPV70 capsid protein L2 polypeptides.

Claim 8. (original) The chimeric protein of claim 6, wherein said papillomavirus capsid protein L2 polypeptide is selected from the group consistingof HPV6b, HPV11, HPV16, and HPV33 capsid protein L2 polypeptides.

Claim 9. (original) The chimeric protein of claim 6, wherein said papillomavirus capsid protein L2 polypeptide is an HPV11 capsid protein L2 polypeptide.

Claim 10. (original) The chimeric protein of claim 1, wherein said papillomavirus capsid protein Ll-binding domain comprises an amino acid sequence selected from the group consisting of the amino acids comprising SEQ ID NO:1, [HPV11] identified at positions 1-455, positions 157-455, positions 313-455, 346-455, 346-439, 396-455, and 413-419, the amino acids comprising SEQ ID NO:2, [HPV 6B] identified at positions 413-419, and 400-443, the amino acids comprising SEQ ID NO:3, [HPV 16] identified at positions 417-423, and positions 412-455, and SEQ ID NO:4, [HPV 33] identified at positions 423-429, and positions 406-449, and substantially identical homologs thereof.

Claim 11. (original) The chimeric protein of claim1, wherein said immunogenic peptide is a viral oncogenic protein.

Claim 12. (original) The chimeric protein of claim 1, wherein said immunogenic peptide is papillomavirus E7 protein.

Claim 13. (original) The chimeric protein of claim 1, further comprising a linker between said first polypeptide and said second polypeptide.

Claim 14. (original) The chimeric protein of claim 1, wherein said chimeric protein is expressed in a bacterial expression system.

Claim 15. (original) The chimeric protein of claim 13, wherein said bacterial expression system is an E. coli expression system.

Claim 16. (currently amended) The chimeric protein of claim 1, further comprising a complex comprising a papillomavirus L1 capsid polypeptide or substantially identical homolog thereof non-covalently bound to said chimeric. ~~protein via said chimeric protein's papillomavirus capsid protein Ll-binding domain.~~

Claim 17. (original) The chimeric protein complex of claim 16, wherein said complex is a capsomere.

Claim 18. (original) The capsomere of claim 17, wherein the stoichiometry of said chimeric protein to said papillomavirus L1 capsid polypeptide in said capsomere is approximately 1: 5.

Claim 19. (canceled)

Claim 20. (canceled)

Claim 21. (canceled)

Claim 22. (original) The capsomere of claim 17, wherein said papillomavirus Ll capsid polypeptide further comprises a glutathione-S-transferase protein, wherein said papillomavirus Ll capsid protein is fused at its amino-or carboxy-terminus to said glutathione-S-transferase protein.

Claim 23. (original) The capsomere of claim 17, wherein said papillomavirus LI capsid protein or fragment is expressed in a bacterial expression system.

Claim 24. (currently amended) The capsomere of claim 23 ~~17~~, wherein said bacterial expression system is an E. coli expression system.

Claim 25. (original) The capsomere of claim 17, wherein both said chimeric protein and said papillomavirus LI capsid protein are co-expressed in a bacterial expression system.

Claim 26. (canceled)

Claim 27. (original) A nucleic acid sequence encoding the chimeric protein of claim1.

Claim 28. (canceled)

Claim 29. (canceled)

Claim 30. (canceled)

Claim 31. (original) A method to elicit an immune response to papillomavirus in a patient, said method comprising administering to said patient a complex according to claim 1.

Claim 32. (original) A method to elicit an immune response to papillomavirus in a patient, said method comprising administering to said patient a complex according to claim 16.

Claim 33. (original) A prophylactic or therapeutic vaccine for eliciting an immune response to a papilloma virus infection, comprising a prophylactic or therapeutically effective amount of a complex according to claim 1 and a pharmaceutically effective carrier.

Claim 34. (canceled)

Claim 35. (original) A prophylactic or therapeutic vaccine for eliciting an immune response to a papilloma virus infection, comprising a prophylactic or therapeutically effective amount of a complex according to claim 16 and a pharmaceutically effective carrier.

Claim 36. (canceled)

Claim 37. (original) A chimeric protein comprising:

a) a first polypeptide comprising a papillomavirus L1; and

b) a second polypeptide comprising at least one immunogenic epitope;

wherein said first polypeptide is fused at its amino- or carboxy-terminus to said second polypeptide by way of an amino acid linker.

Claim 38. (canceled)

Claim 39. (canceled)

Claim 40. (canceled)

Claim 41. (original) The chimeric protein of claim 37, wherein said chimeric protein further comprises a glutathione-S-transferase protein, wherein said chimeric protein is fused at its amino-or carboxy-terminus to said glutathione-S-transferase protein.

Claim 42. (canceled)

Claim 43. (original) The chimeric protein of claim 37, wherein said papillomavirus capsid L1 polypeptide is selected from the group consisting of HPV6, HPV6a, HPV11, HPV16, HPV18, HPV30, HPV31, HPV33, HPV35, HPV39, HPV42, HPV43, HPV44, HPV45, HPV51,HPV52, HPV54, HPV55, HPV56, and HPV70 capsid protein LI polypeptides.

Claim 44. (original) The chimeric protein of claim 42, wherein said papillomavirus capsid protein Ll polypeptide is selected from the group consisting of HPV6b, HPV11, HPV16, and HPV33 capsid protein LI polypeptides.

Claim 45~~43~~. (currently amended) The chimeric protein of claim 42, wherein said papillomavirus capsid protein L1 polypeptide is an HPV11 capsid protein Ll polypeptide.

Claim 46. (new) A method of inducing an immune response against a peptide comprising:

a) providing a chimeric protein comprising a peptide covalently attached to a papillomavirus L1 or L2 capsid polypeptide; and

b) administering the chimeric protein to a subject;

wherein the administration is effective to induce an immune response against the peptide.

Claim 47. (new) The method of claim 46, wherein the peptide is selected from the group consisting of the ras, EGFR, BCable, BRAC, Her2/neu, myc, abl, P1A, MAGE-1, MAGE-3, MAGE-6, BAGE, GAGE-1/2, GAGE-8, GAGE-6, RAGE-1, GnTV, mucin, connexin-37, ribosomal protein L9, gag IAP, gp70 env MuLV, p53, DEAD box helicase p68, c-akt, MUM-1, CDK4, beta-catenin, HLA-A2, bcr-abl, CASP-8 and KIAA0205 proteins.

Claim 48. (new) The method of claim 47, wherein the peptide is selected to have the sequence of a known mutant form of the ras, EGFR, BCable, BRAC, Her2/neu, myc, abl, P1A, MAGE-1, MAGE-3, MAGE-6, BAGE, GAGE-1/2, GAGE-8, GAGE-6, RAGE-1, GnTV, mucin, connexin-37, ribosomal protein L9, gag IAP, gp70 env MuLV, p53, DEAD box helicase p68, c-akt, MUM-1, CDK4, beta-catenin, HLA-A2, bcr-abl, CASP-8 or KIAA0205 proteins.